

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2, 4-5, 8, 10-11, 13, 15-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 and 15 include the limitation that the opening has a predetermined "great" width. The term "great" is a relative term and since the applicant does not provide any limitations as to what the opening is "great" compared or relative to, any sized opening can be considered "great".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. (PGPub 2003/0127046) in view of Eriksson (USPN 6321688) and further in view of Ichinose et al. (USPN 4830882).

Zehner teaches a cleaning apparatus for a paint spray gun nozzle (112). The apparatus comprises a cleaning tank (12) containing a cleaning liquid (64). There is a cylindrical brush (52), which is disposed in the cleaning liquid (figure 4) for cleaning a nozzle (112) and the lower end of the nozzle is in engagement with the brush. There is a motor (28) used to rotate the brush when the lower end of the nozzle is disposed in engagement with the brush. The motor rotates the brush around a longitudinal axis (as shown by arcuate arrow in figure 4 and as described in paragraph 0016). Zehner teaches all the essential elements of the claimed invention however fails to teach that the nozzle has an elongated slit-like discharge opening with a great width, that the brush can be reciprocated horizontally and vertically (claim 1) and that the device for rotating the brush also helps to move the brush horizontally and vertically (claim 8).

Eriksson teaches a cleaning apparatus comprising a longitudinal brush (29) that reciprocates vertically and horizontally (figure 3c and 3d). There is a swinging arm (59') for moving the brush horizontally and an extension arm (81) for moving the brush vertically.

Ichinose teaches a paint gun with different nozzles, wherein one of the nozzles comprises an elongated slit with a great width (figure 13c). The paint that is being discharged from the nozzle of Ichinose is sprayed and the sprayed paint particles are then “dropped” on to a surface to coat the surface in paint.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's brush so that it can be reciprocated vertically and horizontally as

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taught by Eriksson since the reciprocating brush will ensure that the entire portion (tip and sides) of the paint spray gun nozzle will get cleaned without spreading contamination (col. 2, lines 23-44). Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the shape of the orifice of Zehner's nozzle with an elongated slit-like opening as taught by Ichinose because it is known in the art to use various shapes of nozzle orifices on paint spray guns depending on the use of the spray paint (figures 13a-13d). Using a slit-like opening will cause the spray paint to be diffused in a fan-like manner, which leads to an even distribution of paint allowing for even coverage. Therefore, a slit-like opening in the nozzle that is substantially the same length as the brush would have been an obvious modification to one of skill in the art since changing the shape of the orifices is well known in the art and one of skill in the art would know what size and shape the orifice should be based on the use of the nozzle.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046) in view of Eriksson ('688) and Ichinose ('882) as applied to claim 1 above and further in view of Tsutsumi et al. (USPN 6594457).

Zehner in view of Eriksson and Ichinose teach all the essential elements of the claimed invention however fail to teach that the hair structure of the brush is arranged obliquely with respect to the longitudinal axis of the brush. Tsutsumi teaches a longitudinal brush with the bristles (211) that are arranged obliquely (figure 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's bristles so that they are obliquely arranged as taught by Tsutsumi to increase the life expectancy of the brush. Bristles that are slanted rather than perpendicular to the longitudinal axis undergo stress when in

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use and therefore, will break more often than slanted bristles. Additionally, the slant of the bristles will create an induction force caused by the cleaning bias, and also a shearing force caused by the mechanical scrubbing of the brush. The induction force and the shearing force will act on the unwanted material on a nozzle and the material will be captured on the brush more effectively (col. 8, lines 33-39).

Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046) in view of Eriksson ('688) and Ichinose ('882) as applied to claim 1 above and further in view of Batchelder (USPN 2164443).

Zehner in view of Eriksson and Ichinose teach all the essential elements of the claimed invention however fail to teach a brush cleaning means (claim 4) or a comb (claim 10) for scraping material off the long-length brush as it is rotated. Batchelder teaches a brush cleaning means (63) with teeth (66) adjacent a brush (22) with bristles. The cleaning means combs through the bristles as the brush rotates. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's cleaning apparatus with a cleaning means such as a comb attached to the tank as taught by Batchelder so that the long-length brush will be kept clean since the comb-type element will remove any accumulation of material that accrue on the bristles (page 3, col. 2, lines 20-34).

Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046), Eriksson ('688), Ichinose ('882) and Tsutsumi ('457) as applied to claim 2 above and further in view of Batchelder (USPN 2164443).

Zehner, Eriksson, Ichinose and Tsutsumi teach all the essential elements of the claimed invention however fail to teach a brush cleaning means (claim 5) or a comb (claim 11) for

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scraping material off the long-length brush as it is rotated. Batchelder teaches a brush cleaning means (63) with teeth (66) adjacent a brush (22) with bristles. The cleaning means combs through the bristles as the brush rotates. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner, Eriksson, Ichinose and Tsutsumi's cleaning apparatus with a cleaning means such as a comb attached to the tank as taught by Batchelder so that the long-length brush will be kept clean since the comb-type element will remove any accumulation of material that accrue on the bristles (page 3, col. 2, lines 20-34).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. (PGPub 2003/0127046) in view of Eriksson (USPN 6321688) and Ichinose ('882) as applied to claim 1 above and further in view of Tsutsumi ('457).

Zehner in view of Eriksson and Ichinose teach all the essential elements of the claimed invention however fails to teach that the hair structure of the brush is arranged obliquely with respect to both the longitudinal axis of the brush and the circumferential direction of the brush such that the hair structure contacts the lower end of the nozzle. Tsutsumi teaches a longitudinal brush with the bristles (211) that are arranged obliquely with respect to both the longitudinal axis and the circumferential direction of the brush. Figure 2 shows the bristles arranged obliquely with respect to the longitudinal axis and figure 3 shows the bristles arranged obliquely with respect to the circumferential direction of the brush since the bristles are positioned on the roller at a diagonal. Having the bristles positioned on the roller at a diagonal causes the bristles to be oblique to the circumferential direction. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's bristles so that they are obliquely arranged as taught by Tsutsumi to increase the life expectancy of the brush. Bristles that are

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slanted rather than perpendicular to the longitudinal axis undergo stress when in use and therefore, will break more often than slanted bristles. Additionally, the slant of the bristles will create an induction force caused by the cleaning bias, and also a shearing force caused by the mechanical scrubbing of the brush. The induction force and the shearing force will act on the unwanted material on a nozzle and the material will be captured on the brush more effectively (col. 8, lines 33-39).

Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. (PGPub 2003/0127046) in view of Eriksson (USPN 6321688) and Tanaka et al. (USPN 6241827)

Zehner teaches a cleaning apparatus for a paint spray gun nozzle (108). The apparatus comprises a cleaning tank (12) containing a cleaning liquid (64). The tank has an open upper end (24) adapted to receive the lower end of the nozzle (figure 1). There is a cylindrical brush (52), which is disposed in the cleaning liquid (figure 4) for cleaning a nozzle (112). There is a motor (28), which is used to rotate the brush around a longitudinal axis thereof when the lower end of the nozzle is disposed in engagement with the brush. Zehner teaches all the essential elements of the claimed invention however fails to teach that the brush can be reciprocated horizontally and vertically (claim 15), that the device for rotating the brush also helps to move the brush horizontally and vertically (claim 18) and also fails to teach that the cleaning tank comprises partition plates and a drain port (claim 15).

Eriksson teaches a cleaning apparatus comprising a longitudinal brush (29) that reciprocates vertically and horizontally (figure 3c and 3d). There is a swinging arm (59') for moving the brush horizontally and an extension arm (81) for moving the brush vertically.

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Tanaka teaches a cleaning tank (22) with partition plates (vertical portion of 21) extending upwardly from a bottom wall (not labeled but horizontal portion of 22) thereof to define a reservoir portion (21) which contains the cleaning liquid (L) within the cleaning tank. There is a drain port (22a) formed in the bottom wall laterally outward of the reservoir portion such that the cleaning liquid spilling out of the reservoir portion will be drained from the cleaning tank through the drain port (figure 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's brush so that it reciprocated vertically and horizontally as taught by Eriksson since the reciprocating brush will ensure that the entire portion (tip and sides) of the paint spray gun nozzle will get cleaned without spreading contamination (col. 2, lines 23-44). Additionally, it would have been obvious to one of skill in the art at the time the invention was made to modify the cleaning tank Zehner so that it comprises a reservoir portion with partition walls and a drain port in the cleaning tank as taught by Tanaka because then the cleaning tank can be filled to the maximum to ensure coverage of the brush at all times, such as when the brush is rotating and moving, without having concern for splashing or spillage.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046) in view of Eriksson ('688) and Tanaka ('827) as applied to claim 15 above and further in view of Tsutsumi et al. ('457).

Zehner in view of Eriksson and Tanaka teach all the essential elements of the claimed invention however fail to teach that the hair structure of the brush is arranged obliquely with respect to the longitudinal axis of the brush. Tsutsumi teaches a longitudinal brush with the bristles (211) that are arranged obliquely (figure 2). It would have been obvious to one of

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ordinary skill in the art at the time the invention was made to modify Zehner's bristles so that they are obliquely arranged as taught by Tsutsumi to increase the life expectancy of the brush. Bristles that are slanted rather than perpendicular to the longitudinal axis undergo stress when in use and therefore, will break more often than slanted bristles. Additionally, the slant of the bristles will create an induction force caused by the cleaning bias, and also a shearing force caused by the mechanical scrubbing of the brush. The induction force and the shearing force will act on the unwanted material on a nozzle and the material will be captured on the brush more effectively (col. 8, lines 33-39).

Claim 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046) in view of Eriksson ('688) and Tanaka ('827) as applied to claim 15 above and further in view of Batchelder (USPN 2164443).

Zehner in view of Eriksson and Tanaka teach all the essential elements of the claimed invention however fail to teach a brush cleaning means (claim 17) or a comb (claim 19) for scraping material off the long-length brush as it is rotated. Batchelder teaches a brush cleaning means (63) with teeth (66) adjacent a brush (22) with bristles. The cleaning means combs through the bristles as the brush rotates. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's cleaning apparatus with a cleaning means such as a comb attached to the tank as taught by Batchelder so that the long-length brush will be kept clean since the comb-type element will remove any accumulation of material that accrue on the bristles (page 3, col. 2, lines 20-34).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046) in view of Eriksson ('688) and Ichinose ('882) as applied to claim 1 above and further in view of Tanaka ('827).

Zehner in view of Eriksson and Ichinose teach all the essential elements of the claimed invention however fail to teach that the cleaning tank comprises partition plates and a drain port. Tanaka teaches a cleaning tank (22) with partition plates (vertical portion of 21) extending upwardly from a bottom wall (not labeled but horizontal portion of 22) thereof to define a reservoir portion (21) which contains the cleaning liquid (L) within the cleaning tank. There is a drain port (22a) formed in the bottom wall laterally outward of the reservoir portion such that the cleaning liquid spilling out of the reservoir portion will be drained from the cleaning tank through the drain port (figure 2). It would have been obvious to one of skill in the art at the time the invention was made to modify the cleaning tank Zehner so that it comprises a reservoir portion with partition walls and a drain port in the cleaning tank as taught by Tanaka because then the cleaning tank can be filled to the maximum to ensure coverage of the brush at all times, such as when the brush is rotating and moving, without having concern for splashing or spillage.

Response to Arguments

Applicant's arguments filed 10/22/07 have been fully considered but they are not persuasive.

The applicant amended the claims to include the limitation that the slit has a "great" width and that the nozzle discharges coating liquids such that the liquids are dropped on to a surface. In response, the term "great" is a relative term and since the applicant fails to provide limitations as to what the slit is "great" in comparison to, any sized slit can be considered

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"great". Further the limitation that the liquids are dropped onto the surface hold no patentable weight since the function of the nozzle is not positively claimed. The claim only positively includes limitations for a nozzle and a cleaning apparatus for the nozzle. The claim states that the nozzle is *adapted* to discharge coating liquid on to a surface and that the coating liquid is dropped on the surface. Therefore if the nozzle of Zehner and Ichinose were used in the manner intended, it would be capable of being used to drop coating liquid on a surface. Further, how the nozzle is used is considered to be an intended use limitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Since the nozzle of Zehner and Ichinose comprise all the structural elements of the claim, then it is clear that the nozzle is capable of performing the same function. It is further noted that even though the liquid coating of Ichinose is sprayed from the nozzle, it is clear that the sprayed particles will "drop" on the surface being coated to provide a painted finish. The term "drop" is a broad limitation and can be interpreted in various ways.

The applicant further argues that Tanaka can not be considered analogous art since it does not pertain to the same field of endeavor and it is not reasonably pertinent to the problem addressed by the present invention. In response, Tanaka teaches a cleaning tank as claimed in the present invention. Tanaka teaches a tank for holding liquids during a cleaning operation, which is exactly what the tank of the present invention does. Therefore Tanaka can be considered to be analogous. For the rejection, the cleaning tank of Zehner is being modified with the cleaning tank of Tanaka and even though the cleaning tank of Tanaka discloses use with

a semiconductor cleaning system, the reference is being used solely for the teaching of a cleaning tank with a drain port. The modification of the cleaning tank of Zehner with the cleaning tank of Tanaka is an obvious modification since both teach a tank for holding liquids during a cleaning process.

The applicant further argues that Examiner has failed to point out evidence or motivation, other than the claimed invention for combining references. It is noted that since all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. Further, the evidence or motivation that the Examiner is using to combine references is not hindsight. For the Eriksson reference, Eriksson teaches a brush that is movable based on differing sizes teats. It is known that there are various paint guns available and not all paint guns have the exact same nozzle, as taught by Ichinose. Therefore, it is obvious that one of skill in the art would modify the rotating brush of Zehner so that it moves similar to Eriksson to allow the cleaning device the capability of cleaning various paint gun nozzles. For the Tsutsumi reference, the rotating brush has slanted bristles to more effectively capture unwanted material when in use (col. 8, lines 33-39). Regardless of the environment being used, it is obvious that one of skill in the art would have found it obvious to modify any rotating brush with slanted bristles so that it will clean more effectively. And lastly, one of skill would have found it obvious to use Batchelder's comb to remove any accumulated material on the brush regardless of the environment in which it is being used, because having a means for removing accumulated material from the brush will allow the brush to clean more efficiently.

For the reasons listed above the rejections are being maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shay L. Karls whose telephone number is 571-272-1268. The examiner can normally be reached on 7:00-4:30 M-Th, alternating F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 571-272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shay L Karls/
Primary Examiner, Art Unit 3723